## REMARKS/ARGUMENTS

Claims 15-18, 23-25 and 28-32 are active. Claim 15 has been simplified by referring to a "plastic" in its preamble. This term is intended to subsume the terms deleted terms polymer, plastic, PVC, or PVC plastisol. Claim 19 has been merged into Claim 18. Claims 23 and 24 have been merged into a single independent claim (Claim 23) as have Claims 28 and 30 (Claim 28). New Claim 32 tracks and finds support in prior Claim 29. Other editorial amendments have been made to improve the clarity of the claims. Accordingly, the Applicants do not believe that any new matter has been introduced.

The Applicants thank Examiner Harlan for the courteous and helpful interview of March 23, 2006. The data shown in the Table on page 10 of the last response were reviewed. The Applicants pointed out that the 2-propylheptyl benzoate mixtures of the invention have lower glass transition temperatures that the generically disclosed isodecyl benzoates of the prior art and that there was no expectation of success in the prior art for selection of this type of isodecyl benzoate (i.e., having a high content of 2-propylheptyl benzoate) for providing a lower glass transition temperature. Whether the mixture of Claim 1 (which may contain up to 99% of 2-propylheptyl benzoate) would have been obvious over prior art teaching 2-propylheptyl benzoate *per se* was discussed. Possible selection arguments with respect to use of 2-propylheptyl mixtures of the invention in products such as plastics were reviewed.

### Rejection—35 U.S.C. §103

Claims 1-24, 26 and 27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Arendt et al. (I), U.S. Patent No. 5,236,987, and Arendt et al. (II), WO 89/00173, in view of Godwin et al., WO 97/39060. The rejection of Claims 1-14, 19-22 and 26-27 is moot since these claims have been cancelled. The remaining claims are directed to plastics

containing isodecyl benzoates having a high content of 2-propylheptyl benzoate (Claims 15-18) or to mixtures containing additional ingredients, i.e., diisononyl adipate or one or more $C_4$-$C_{13}$ alkyl cyclohexanedicarboxylates (Claims 23-24).

The inventors have discovered that mixtures of isomeric decyl benzoates having a high content of 2-propylheptyl benzoate have lower glass transition temperatures and would impart desirable low temperature flexibility on products such as plastic. The isodecyl benzoate mixtures of the invention contain high concentrations of isodecyl benzoate produced from 2-propylheptanol—at least **50%** compared to the **3.6%** or less of the Exxal 10 benzoates. As shown by Example 2 in the specification and by new Examples A and B in the previously-filed Declaration, isodecyl benzoates produced from 98% pure 2-propylheptanol (Example A) or a mixture containing 52% 2-propylheptanol have lower glass transition temperatures than the isodecyl benzoates produced using Exxal 10:

| Benzoic acid ester from: | Glass transition temperature (Tg) |
|---|---|
| 90% 2-propylheptanol + 10% 2-propyl-4-methylhexanol (Example 2) | **-92°C** |
| Exxal 10 ≤3.6% 2-propyl heptanol; predominantly methyl-branched isodecanol (Comparative Example 3) | -90°C |
| 98% 2-propylheptanol (Declaration, Example A) | **-93°C** |
| 52% 2-propylheptanol (Declaration, Example B) | **-91.3°C** |

As shown in the table above, selection of isodecyl benzoate mixtures according to the invention which have lower glass transition temperatures which would confer superior low temperature flexibility on plastics like PVC. Plastics with a lower glass transition temperature remain flexible at a lower temperature. For example, the Space Shuttle Challenger disaster was caused by rubber O-rings that were below their glass transition

temperature on an unusually cold Florida morning, and thus could not flex adequately to form proper seals between sections of of the two solid-fuel boosters.

Accordingly, this rejection would not apply to Claims 15-18 which are directed to plastics containing the isodecyl benzoate mixtures according to the invention. These plastics would be expected to have improved low temperature flexibility because they incorporate the isodecyl benzoates having low glass transition temperatures (as well as the other properties described on page 10, lines 15-18 of the specification) as plasticizers. There is no suggestion or reasonable expectation of success for obtaining plastics having these improved properties using the generically disclosed products of the prior art.

Moreover, this rejection would not apply to Claims 23-24 (and Claim 25) which are directed to mixtures having additional ingredients (see the specification, page 10, lines 1-11) and thus not suggested by the prior art.

The specific prior art references are discussed in more detail below.

Arendt (I) and (II) and Godwin do not suggest producing a plastic by selecting a mixture of:

50 to 99% of 2-propylheptyl benzoate and

from 1 to 50% of at least one decyl benzoate selected from the group consisting of 2-isopropyl-4-methylhexyl benzoate, 2-isopropyl-5-methylhexyl benzoate, 2-propyl-4-methylhexyl benzoate, 2-propyl-5-methylhexyl benzoate, and mixtures thereof. Moreover, these documents do not provide any reasonable expectation of success for lowering the glass transition temperature of plastics produces using the benzoates according to the invention.

Arendt (I) is not limited to particular mixtures of isodecyl benzoates but discloses many other compounds, see col. 3, lines 6-11. While these compounds are all disclosed for use in paints, there is no disclosure of the particular isodecyl benzoates of the present claims, such as 2-propylheptyl benzoate, 2-isopropyl-4-methylhexyl benzoate, 2-isopropyl-5-

methylhexyl benzoate, 2-propyl-4-methylhexyl benzoate, 2-propyl-5-methylhexyl benzoate or mixtures of the isodecyl benzoates. Moreover, there is no suggestion to specifically select these particular types of isodecyl benzoates for use in plastics or any reasonable expectation that use of these particular types of isodecyl benzoates would provide any special benefit not shared by all of the benzoates having 8-12 carbon atoms.

Arendt (II) is directed to benzoates having 10-12 carbon atoms for use in paints and plastisols (see abstract). It too does not disclose plastics containing the particular isodecyl benzoate mixtures of the invention (Claims 23-24), nor provide any reasonable expectation of success for producing plastics which are more flexible at low temperatures by using the isodecyl benzoate mixtures according to the invention.

Godwin discloses C11-C14 benzoates (see abstract), but not C10 benzoates. There is no suggestion or motivation provided by Godwin for including the particular mixtures of isodecyl benzoates of the present invention in plastics, nor any suggestion for the particular mixtures of Claims 23-24.

There are many different isomers of isodecyl alcohol and their esterified products isodecyl benzoates. The claims are directed to plastics incorporating isodecyl benzoates with a high concentration of 2-propylheptyl benzoate which have properties that are not shared by the genus of C8-C12 benzoates disclosed by the prior art. For example, the claimed plastics incorporate isodecyl benzoates that have low glass transition temperatures compared to other isodecyl benzoates and thus provide greater low-temperature flexibilization potential.

Exxal 10 is an example of an isodecyl benzoate that falls outside of the mixtures required by claims and which is formed predominantly from isodecyl isomers other than 2-propylheptyl benzoate. Unlike the isodecyl benzoate mixtures required by the invention, the Exxal 10 benzoate has a very low (3.6% or less) concentration of isodecyl benzoate based on 2-propylheptanol.

The Exxal 10 benzoate contains a high concentration of isodecyl benzoates having branching methyl groups (see the specification, page 19, last two lines) and has different physical and functional properties.

Accordingly, since the prior art neither suggests nor provides a reasonable expectation of success for the invention, the Applicants respectfully request that this rejection be withdrawn.

Allowable Subject Matter

Claims 28-31 were objected to, but not rejected. Claim 28 has been revised to be in independent form and Claims 29-32 now depend from Claim 28. Accordingly, the Applicants respectfully submit that these objections may be withdrawn and that these claims are now in condition for allowance.

## CONCLUSION

In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. Early notification to that effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon

Thomas M. Cunningham
Attorney of Record
Registration No. 45,394

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 06/04)
TMC:aif